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EXAMINER	
ZERVIGON, RUDY	
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1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/925,579	NAKANO ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-6,64,65,67,68,71-81 and 83-89* is/are pending in the application.

4a) Of the above claim(s) *2-6,64,65,67,68 and 71-73* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *74-81 and 83-89* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102/103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 74-79, 81, 88, and 89 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Murata et al (USPat. 5,423,915) in view of Patrick (USPat. 5,474,648). Murata teaches a plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) comprising: a plasma processing chamber (1; Figure 1; column 5; line 44 - column 6; line 11) having a plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) for exciting a plasma; a radio frequency generator (4; Figure 1; column 5; line 44 - column 6; line 11) for supplying a radio frequency voltage to the electrode (2; Figure 1; column 5; line 44 - column 6; line 11); a radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) connected to the electrode (2; Figure 1; column 5; line 44 - column 6; line 11); a matching circuit (104; Figure 1; column 5; line 44 - column 6; line 11) having an input terminal (104/4 interface; Figure 1; column 5; line 44 - column 6; line 11) and an output (106, 109; Figure 1; column 5; line 44 - column 6; line 11) end, wherein the input terminal (104/4 interface; Figure 1; column 5; line 44 - column 6; line 11) is connected to the radio frequency generator (4; Figure 1; column 5; line 44 - column 6; line 11) and the output (106, 109; Figure 1; column 5; line 44 - column 6; line 11) end is connected to an end of the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) so as to achieve impedance matching between the plasma processing chamber (1; Figure 1; column 5; line 44 -

column 6; line 11) and the radio frequency generator (4; Figure 1; column 5; line 44 - column 6; line 11) – claim 74.

Applicant's claim 74 limitations of

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a set of electrical radio frequency factors of the plasma processing chamber configured such that three times a first series resonant frequency f0 of the plasma processing chamber, is larger than a power frequency fe of the radio frequency voltage, wherein the first series resonant frequency f0 corresponds to a minimum impedance of the plasma processing chamber.

"

And all of claims 88 and 89 appear to be a claim recitation of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Murata further teaches that at least one of the shape of a feed plate (105; Figure 1; column 5; line 44 - column 6; line 11), the overlap area (column 8; lines 45-59) of the plasma excitation electrode and a chamber wall, insulation material between the plasma excitation electrode and the chamber wall, or the capacitance (column 8; lines 45-59) between a susceptor electrode and

the chamber wall are considered result-effective variables for film thickness distribution and film forming speed as taught by Murata (column 8; lines 45-59).

Applicant's following claim limitations, not taught by Murata, but are also are believed to be intended use requirements of the pending apparatus claims:

i. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 74, wherein a frequency of 1.3 times the first series resonant frequency f0 is larger than a power frequency fe, as claimed by claim 75

ii. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 75, wherein the first series resonant frequency f0 is larger than three times the power frequency fe, as claimed by claim 76

iii. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 76, wherein a series resonant frequency f0' which is defined by a capacitance between the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and a counter electrode (2; Figure 1; column 5; line 44 - column 6; line 11) for generating the plasma in cooperation with the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11), is larger than three times the power frequency fe, as claimed by claim 77

iv. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 77, wherein the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the counter electrode (2; Figure 1; column 5; line 44 - column 6; line 11) are of a parallel plate type, and the series resonant frequency f0' and the power frequency fe satisfy the relationship:

$f_0' > \sqrt{\frac{d}{\delta}} f_e$ wherein d represents a distance between the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the counter electrode (3; Figure 1; column 5; line 44 - column 6; line 11), and δ represents a sum of a distance between the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and a generated plasma and a distance between the counter electrode (3; Figure 1; column 5; line 44 - column 6; line 11) and a generated plasma, as claimed by claim 78.

Murata further does not teach:

v. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 74, further comprising a resonant frequency measuring terminal for measuring a resonant frequency of the plasma processing chamber (1; Figure 1; column 5; line 44 - column 6; line 11), in a vicinity of the end of the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11), as claimed by claim 79

vi. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 79, further comprising a resonant frequency measuring unit which is detachably connected to the resonant frequency measuring terminal, as claimed by claim 81

In the event that Murata is deemed not to anticipate the claims, Patrick (USPat. 5,474,648) teaches a plasma reactor (104, Figure 2a; column 6; line 54 – column 7; line 25) including a variable RF parameter sensor (202; Figure 2a) which measures power, voltage, current, phase angle, harmonic content (abstract), and impedance parameters at the plasma chamber electrode (112; Figure 2a, claim 5). That Patrick et al measures a frequency, resonant or otherwise, at the

plasma chamber electrode is inherent because the applied frequency is that of the dynamic voltage and current that are measured and dynamically controlled (claim 6). The Examiner believes Patrick's apparatus is inherent in setting a frequency f_0 corresponding desired, or optimized values, including "corresponding" a minimum impedance (as measured by Patrick) of the plasma processing chamber. That Patrick can measure the minimum impedance with the plasma chamber disconnected from the plasma apparatus during a non-discharge period, is a claim requirement of intended use. See above.

Patrick further teaches that his plasma processing apparatus (Figure 2a; column 6; line 54 – column 7; line 25) produces frequencies which is defined by a capacitance between the plasma excitation electrode (112; Figure 2a) and a counter electrode (114; Figure 2a) for generating the plasma in cooperation with the plasma excitation electrode (112; Figure 2a). Further when the structure recited in the references is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA1977) – MPEP 2114.

In the event that Murata is deemed not to anticipate the claims, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Murata to use Patrick et al's system for plasma dynamic control including optimizing the relative frequencies between Murata's plasma excitation electrode and Murata's radio frequency generator depending on the geometry of the plasma chamber and dynamic processing conditions.

Motivation for Murata to use Patrick et al's system is for plasma dynamic control including optimizing the relative frequencies between Murata's plasma excitation electrode and Murata's radio frequency generator depending on the geometry of the plasma chamber and dynamic processing conditions is for enabling the repeatability and uniformity of plasma processing as taught by Patrick et al (column 3; lines 55-65) and Murata (column 8; lines 45-59).

It would be obvious to those of ordinary skill in the art to optimize the operation of the claimed invention (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele , 406 F.2d 1403, 16_0 USPQ 809 (CCPA 1969); Merck & Co. Inc . v. Biocraft Laboratories Inc. , 874 F.2d 804, 1_0 USPQ2d 1843 (Fed. Cir.), cert. denied , 493 U.S. 975 (1989); In re Kulling , 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990), MPEP 2144.05).

3. Claims 83 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murata et al (USPat. 5,423,915) in view of Patrick (USPat. 5,474,648) and Hoke; William E. et al. (US 5077875 A). Murata and Patrick are discussed above.

Murata and Patrick do not teach:

i. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 74, wherein the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) comprises an overlapping area with respect to the chamber wall, the overlapping area *adapted* to set the first series resonant frequency f0 such that three times the first series resonant frequency f0 is larger than a power frequency fe supplied from the radio frequency generator (4; Figure 1; column 5; line 44 - column 6; line 11), as claimed by claim 83.

ii. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 74, wherein the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) has a length *adapted* to set the first series resonant frequency fo such that three times the first series resonant frequency f0 is larger than the power frequency fe, as claimed by claim 84

Hoke teaches a cross flow deposition reactor (Figure 3) similar to Murata's cross flow deposition reactor (7; Figure 1). In particular, Hoke teaches a shower plate (12; Figure 3) at the gas introduction point (15; Figure 3) in the reactor (11; Figure 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Murata to use Patrick et al's system for plasma dynamic control including optimizing the relative frequencies between Murata's plasma excitation electrode and Murata's radio frequency generator depending on the geometry of the plasma chamber and dynamic processing conditions, further, for Murata and Patrick to add Hoke's shower plate (12; Figure 3).

Motivation for Murata to use Patrick et al's system for plasma dynamic control including optimizing the relative frequencies between Murata's plasma excitation electrode and Murata's radio frequency generator depending on the geometry of the plasma chamber and dynamic processing conditions is for enabling the repeatability and uniformity of plasma etching processes as taught by Patrick et al (column 3; lines 55-65), motivation Murata and Patrick to add Hoke's shower plate is for process gas diffusion under laminar flow as taught by Hoke (column 7; lines 54-65).

It would be obvious to those of ordinary skill in the art to optimize the operation of the claimed invention (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele , 406 F.2d

1403, 16_0 USPQ 809 (CCPA 1969); Merck & Co. Inc . v. Biocraft Laboratories Inc. , 874 F.2d 804, 1_0 USPQ2d 1843 (Fed. Cir.), cert. denied , 493 U.S. 975 (1989); In re Kulling , 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990), MPEP 2144.05).

4. Claims 85-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murata et al (USPat. 5,423,915). Murata teaches a plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) comprising: a plasma processing chamber (1; Figure 1; column 5; line 44 - column 6; line 11) having a plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) for exciting a plasma and a first series resonant frequency f0; a radio frequency generator (4; Figure 1; column 5; line 44 - column 6; line 11) for supplying a radio frequency voltage to the electrode (2; Figure 1; column 5; line 44 - column 6; line 11); a radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) connected to the electrode (2; Figure 1; column 5; line 44 - column 6; line 11); and a matching circuit (104; Figure 1; column 5; line 44 - column 6; line 11) having an input terminal (104/4 interface; Figure 1; column 5; line 44 - column 6; line 11) and an output (106, 109; Figure 1; column 5; line 44 - column 6; line 11) end, wherein the input terminal (104/4 interface; Figure 1; column 5; line 44 - column 6; line 11) is connected to the radio frequency generator (4; Figure 1; column 5; line 44 - column 6; line 11) and the output (106, 109; Figure 1; column 5; line 44 - column 6; line 11) end is connected to an end of the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) so as to achieve impedance matching between the plasma processing chamber (1; Figure 1; column 5; line 44 - column 6; line 11) and the radio frequency generator (4; Figure 1; column 5; line 44 - column 6; line 11) – claim 85

Murata does not teach the claim 85 limitation of:

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wherein at least one of the *shape* of the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11), an overlapping area of the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and a chamber wall, a thickness of insulation material between the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the chamber wall, **and** a capacitance between a susceptor electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the chamber wall is adjusted such that three times the first series resonant frequency fo is larger than a power frequency fe supplied from the radio frequency generator (4; Figure 1; column 5; line 44 - column 6; line 11).

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Likewise, Murata further does not teach the limitation of:

i. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 85, wherein at least one of the *shape* of the radio frequency feeder plate (105; Figure 1; column 5; line 44 - column 6; line 11), the overlapping area of the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the chamber wall, the thickness of the insulation material between the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the chamber wall, and the capacitance between the susceptor electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the chamber wall is adjusted such that 1.3 times the first series resonant frequency f0 is larger than the power frequency fe, as claimed by claim 86.

ii. The plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 86, wherein at least one of the *shape* of the radio frequency feeder

plate (105; Figure 1; column 5; line 44 - column 6; line 11), the overlapping area of the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and a chamber wall, the thickness of the insulation material between the plasma excitation electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the chamber wall, and the capacitance between a susceptor electrode (2; Figure 1; column 5; line 44 - column 6; line 11) and the chamber wall is adjusted such that the first series resonant frequency fo is larger than the power frequency fe, as claimed by claim 87

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Murata to optimize the size/dimension of Murata's apparatus.

Motivation for Murata to optimize the size/dimension of Murata's apparatus is for plasma dynamic control including optimizing the relative frequencies between Murata's plasma excitation electrode and Murata's radio frequency generator depending on the geometry of the plasma chamber and dynamic processing conditions is for enabling the repeatability and uniformity of plasma processing as taught by Murata (column 8; lines 45-59). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

5. Claim 80 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murata et al (USPat. 5,423,915) and Patrick (USPat. 5,474,648) in view of Stramke (USPat. 4,645,981). Murata and Patrick are discussed above. Murata and Patrick do not teach that Murata's plasma processing apparatus (Figure 1; column 5; line 44 - column 6; line 11) according to claim 79,

further comprising a switch provided between the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) and the resonant frequency measuring terminal, wherein the switch electrically disconnects the end of the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) from the resonant frequency measuring terminal and connects the end of the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) to the output (106, 109; Figure 1; column 5; line 44 - column 6; line 11) end of the matching circuit (104; Figure 1; column 5; line 44 - column 6; line 11) - claim 80.

Applicant's claim 80 limitations of "a plasma excitation mode in which the plasma is excited, whereas the switch electrically connects the end of the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) to the resonant frequency measuring terminal and disconnects the end of the radio frequency feeder (105; Figure 1; column 5; line 44 - column 6; line 11) from the resonant frequency measuring terminal in a measuring mode in which the resonant frequency of the plasma processing chamber (1; Figure 1; column 5; line 44 - column 6; line 11) is measured" are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Stramke teaches a capacitive plasma processing apparatus (Figure 1; column 3; line 57 – column 4, line 19) including a switch ("S1"; Figure 1; column 3; line 57 – column 4, line 19) for a current sensor (12; Figure 1; column 3; line 57 – column 4, line 19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Murata and Patrick to add a switch to the RF parameter sensor as taught by Stramke.

Motivation for Murata and Patrick to add a switch to the RF parameter sensor as taught by Stramke is to allow for current sampling durations as taught by Stramke (column 4; lines 46-50).

Response to Arguments

6. Applicant's arguments filed September 23, 2008 have been fully considered but they are not persuasive.

7. Applicant states:

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The Examiner continues to assert that these limitations "appear to be a claim recitation of intended use in the apparatus claims." This characterization is both incorrect and unsupported. The Examiner is respectfully requested to point out specifically where in the claims the alleged "intended use" language appears. To what intended use is he referring? Applicants maintain that the claims include structural features that - as the Examiner has acknowledged - are not shown in the cited art.

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In response, the Examiner has repeatedly and carefully parsed Applicant's claimed intvention to specifically note where and why the Examiner believes Applicant's claimed invention no longer recites *structural* features of the pending apparatus claims. The claimed intended use elements

that the Examiner has consistently referred to in the claimed apparatus is, for example, claim language whose analysis in the prior art would depend on *how* the prior art apparatus is used. For example in claims 74, and new claim 88, etc.. , the intended use that the Examiner has identified is the "set of electrical radio frequency factors" which, according to Applicant's specification definitions at page 64, are clearly *nonstructural* and represent *parameters* that are optimized, manipulated, and controlled. The "configuration" of the claimed parameters *is not* per se a positively recited structure, but is a method for a process each of which occupy different statutory classes of invention. See MPEP 2106.

Applicant further states:

"

Indeed, the Examiner makes no case that the cited references disclose "configuring a set of electrical radio frequency factors of the plasma processing chamber such that three times a first series resonant frequency f0 of the plasma processing chamber is larger than a power frequency fe supplied by the radio frequency generator," and he explicitly states on pages 4-6 of the present Office Action that Murata does not teach each and every limitation of claims 75-79 and 81. Instead, the Examiner relies on the above- mentioned intended use argument in his rejection of claims 74-81 without providing any support for his position.

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In response, the Examiner disgrees. The reader need only pay close attention to Applicant's above position with careful consideration of "…a first series resonant frequency f0 of the plasma processing chamber is larger than a power frequency fe <u>*supplied*</u> by the radio frequency generator". Thus, Applicant's position, and indeed the claimed invention, hinge on, for example,

the *value of the supplied power frequency fe* of the structure of the radio frequency generator. Thus, if the *value of the supplied power frequency fe* is to be weighed as a structural feature then *how* the prior art's structure is *used* must also be considered. Such a test is believed best reserved for method classes of invention and not the pending apparatus claims.

Conclusion

8. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Friday schedule from 9am through 5pm. The official fax phone number for the 1792 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner

can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435

/Rudy Zervigon/

Primary Examiner, Art Unit 1792